

# How to Judge Electrolytes and Non-electrolytes and Applications of Electrolytes

## Difference Between Electrolyte and Non-electrolyte

Electrolytes are compounds that conduct electricity in an aqueous or molten state; non-electrolytes are compounds that do not conduct electricity in both aqueous and molten states. Elements and mixtures are not electrolytes or non-electrolytes whether they can conduct electricity in an aqueous solution or in a molten state. For example, all metals are neither electrolytes nor non-electrolytes, because they are not compounds and do not meet the definition of electrolytes.



Put it clearly:

1. Whether it can be ionized (essential difference): Electrolytes are compounds that can be ionized under certain conditions, while non-electrolytes cannot be ionized.
2. Common substance categories: electrolytes are generally acids, bases, salts, typical metal oxides, and some non-metal hydrides. Non-electrolytes are usually non-metal oxides, some non-metal hydrides, and most organic compounds.
3. Compound category: Electrolytes are ionic compounds and some covalent compounds, and non-electrolytes are all covalent compounds.

## Application of Electrolytes

Electrolytes play an important role in the human body. Water and electrolytes are widely distributed in and out of cells and participate in many important functions and metabolic activities in the body, and electrolytes play a very important role in the maintenance of normal life activities.

### 1. Maintain body fluid osmotic pressure and water balance

Sodium ions and chloride ions are the main inorganic salt ions that maintain the osmotic pressure of the intracellular fluid. In normal human cells, the osmotic pressure of intracellular and extracellular fluids is basically equal, thereby maintaining the dynamic balance of intracellular and extracellular fluids.

## 2. Maintain the acid-base balance of body fluids

Body fluids and electrolytes make up buffer pairs to regulate acid-base balance.

## 3. Maintain the irritability of nerves and muscles

The irritability of nerves and muscles requires a certain concentration and proportion of electrolytes in body fluids to maintain. When sodium ions and potassium ions are too low, neuromuscular irritability is reduced, and limb weakness or even paralysis can occur; when calcium ions and magnesium ions are too low, nerve and muscle irritability increases, and tetany may occur.

## 4. Maintain normal cell metabolism

A variety of inorganic ions act as cofactors for metalloenzymes or metal-activating enzymes to regulate substance metabolism at the cellular level.

# Application of Polymer Electrolytes

## 1. As a flocculant

The polymer electrolyte has a flocculation effect and is an effective polymer flocculant. Its charged part can neutralize the charge of the colloidal particles, destroy the stability of the colloidal particles in water, promote their collision, and entangle many fine particles through the long polymer chain bridging. Together, they aggregate into large particles, thereby accelerating sedimentation. It has fast flocculation and sedimentation speed, high sludge dewatering efficiency, and special effects on the treatment of certain wastewater. The flocculation capacity of polymer electrolytes is several times to dozens of times larger than that of inorganic flocculants such as alum and ferric chloride and has unique properties that many inorganic flocculants do not have.

## 2. Application in the paper industry

With the development of the synthetic polymer industry, polymer electrolytes are increasingly used as papermaking aids in the papermaking industry and play an important role. For example, quaternary polyacrylamide, cationic starch, polyethyleneimine, etc. can be used as dry and wet strengthening agents to improve the dry and wet strength of paper; carboxymethyl cellulose and cationic starch are sizing agents on the surface of the paper, while It can also increase the retention rate of fillers and brighteners; cationic polyacrylamide can flocculate the fine fibers suspended in the sedimentation water and has the effect of flocculation and trapping, so as to achieve the purpose of recycling the cellulose and fillers lost in the discharge water from the paper machine and clarifying the water.

## 3. Application in the petroleum industry

Polymer electrolytes can be used as clay stabilizers, polymers for fracturing additives, corrosion inhibitors, etc.